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10/521,839

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Graham Hodgson

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EXAMINER

PATEL, TAYAN B

ART UNIT

PAPER NUMBER

1795

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/521,839	Applicant(s) HODGSON ET AL.	
	Examiner TAYAN PATEL	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 24-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 24-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 24, 27, 39-40, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grant et al (US 4125443) in view of Matson (US 4226695).

As to claim 1, Grant et al discloses an apparatus for the generation/production of fluorine (See column 1, lines 5-6) comprising: individual electrolytic cells, 8, which are connected in parallel which are connected to a discharge pipe/gas distribution system, 5, (contains fluorine because that is what is produced in the cell) wherein each cell is isolatable through flow control valves, 9 (See columns 2-3, lines 34-19). However, Grant et al fails to explicitly disclose the cells being removable for remote maintenance.

Matson discloses an electrochemical processing system (See abstract) wherein several cells may be connected in parallel or series so that one or more cells may be shut down periodically for replacement of electrodes, etc., while the remaining cells are left on-line in order to permit continuous operation (See column 8, lines 44-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the removable cells in Matson in the apparatus of Grant et al in order to permit continuous operation.

As to claim 24, Grant et al discloses valves, 9, which isolate the cells from one another. See column 3, lines 1-3.

As to claim 27, Grant et al discloses identical cells/cassettes. See figure 1 – all the units are the same size.

As to claim 39, Grant et al discloses all of the claimed limitations as discussed with respect to claim 1 above, wherein claim 39 does not further limit the structure of the apparatus as recited in claim 1.

As to claim 40, Grant et al discloses all of the claimed limitations as discussed with respect to claim 39 above, wherein it would be an obvious variant (and mere design choice) to pick a reasonable size for the container in order to contour to the what the end user decides to use the apparatus for. See MPEP 2144.04 IV – Size.

As to claim 42, Grant et al discloses an apparatus for the generation/production of fluorine (See column 1, lines 5-6) comprising: individual electrolytic cells, 8, which are connected in parallel which are connected to a discharge pipe/gas distribution system, 5, (contains fluorine because that is what is produced in the cell) wherein each

cell is isolatable through flow control valves, 9 (See columns 2-3, lines 34-19).
However, Grant et al fails to explicitly disclose disconnecting the cells without interrupting the supply of fluorine.

Matson discloses an electrochemical processing method (See abstract) wherein several cells may be connected in parallel or series wherein some cells may be disconnected/shut down periodically for replacement of electrodes, etc., while the remaining cells are left on-line in order to permit continuous operation (See column 8, lines 44-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of removable cells in Matson in the method of Grant et al in order to permit continuous operation.

4. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grant et al (US 4125443) in view of Matson (US 4226695) as applied to claim 24 above, and further in view of Rosenberg et al (US 6024847) in view of Reinhardt et al (US 3966569).

As to claim 25, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 24 above, wherein Grant et al discloses an electrolytic cell (See column 2, lines 60-67), yet fails to disclose a double isolation valve.

Rosenberg et al discloses an electrolysis cell (See clm 12) wherein the system is isolated via isolation valves, 24, (the valve isolates both ways, therefore double isolation) in order to reduce the risk of introducing contaminants (See column 10, lines 20-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the isolation valves in Rosenberg et al in the apparatus of modified Grant et al in order to reduce the risk of introducing contaminants.

However, modified Grant et al still fails to disclose an attached extraction and scrubbing system.

Reinhardt et al discloses an electrolysis apparatus (See column 8, lines 16-28) comprising extraction via mixer settler apparatuses (See column 8, lines 6-8) and a wet scrubber in order to remove dust accompanying the gas (See column 8, lines 54-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the extraction unit and wet scrubber in Reinhardt et al in the apparatus of modified Grant et al in order to remove dust accompanying the gas.

5. Claims 26, 29 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grant et al (US 4125443) in view of Matson (US 4226695) as applied to claim 1 above, and further in view of Tojo et al (US 6818105).

As to claims 26 and 29, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 1 above, wherein Grant et al discloses an electrolytic cell (See column 2, lines 60-67), yet fails to explicitly disclose a common apparatus enclosure.

Tojo et al discloses an apparatus comprising an electrolytic cell, 2, with a cabinet/enclosure, 1, in order to control the internal atmosphere of the cell, either collectively or in isolation. See column 6, lines 1-24.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the cabinet in Tojo et al in the apparatus of modified Grant et al (either around each individual electrolytic cell, 8, or one large enclosure around all the cells) in order to control the internal atmosphere of the cell, collectively or in isolation.

As to claim 32, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 29 above, wherein Tojo et al further discloses the cabinet/enclosure, 1, fixed to the cell, 2, wherein the cathode chamber, 7, is within/connected to the cell (See column 6, lines 1-24; See also figure 1).

As to claim 33, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 32 above, wherein Tojo et al further discloses the enclosure, 1, having a framework paneling. See figure 1 – the cabinet has sides/paneling.

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grant et al (US 4125443) in view of Matson (US 4226695) as applied to claim 1 above, and further in view of Bouy et al (US 4064032).

As to claim 28, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 1 above, wherein Grant et al discloses electrolytic cells, (See column 2, lines 60-67), yet fails to discuss wheels for the units.

Bouy et al discloses an electrolysis cell structure (See column 1, lines 9-13) comprising movable positioning means such as small wheels in order for an element or group of elements to be replaced (See column 4, lines 16-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the wheels in Buoy in the apparatus of modified Grant et al in order for an element or group of elements to be replaced.

7. Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grant et al (US 4125443) in view of Matson (US 4226695) in view of Tojo et al (US 6818105) as applied to claims 26 and 29 above, respectively, and further in view of Reinhardt (US 3966569).

As to claims 30 and 31, modified Grant et al discloses all of the claimed limitations as discussed with respect to claims 26 and 29 above, respectively, wherein Grant et al discloses an electrolytic cell (See column 2, lines 60-67), yet fails to disclose an attached extraction and scrubbing system.

Reinhardt et al discloses an electrolysis apparatus (See column 8, lines 16-28) comprising extraction via mixer settler apparatuses (See column 8, lines 6-8) and a wet scrubber in order to remove dust accompanying the gas (See column 8, lines 54-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the extraction unit and wet scrubber in Reinhardt et al in the apparatus of modified Grant et al (either around the main enclosure or the enclosure for each individual cell) in order to remove dust accompanying the gas.

8. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grant et al (US 4125443) in view of Matson (US 4226695) in view of Tojo et al (US 6818105) as applied to claim 32 above, and further in view of Gange (US 4121130).

As to claim 34, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 32 above, wherein Grant et al discloses an electrolytic cell (comprises of an anode and cathode since a reaction takes place) (See column 2, lines 60-67), yet fails to discuss a cathode connection of zero volts relative to earth.

Gange et al disclose a cathode structure, 10, comprising a cathode, 18, which is maintained at ground voltage, hereinafter defined as zero volts in order to have a user desired level of emission given the specific dimension of the cathode. See column 3, lines 23-48.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the cathodic ground potential in Gange in the apparatus of modified Grant et al in order to have a desired level of emission given the specific dimension of the cathode.

9. Claims 35-37 and 41 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grant et al (US 4125443) in view of Matson (US 4226695) as applied to claim 1 above, and further in view of Greefkes (US 5225176).

As to claims 35 and 36, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 1 above, wherein Grant et al further discloses electrochemical cells (See column 2, lines 60-67), yet fails to disclose a purification unit and a buffer unit.

Greefkes discloses electrolysis cell (no figure number) (See column 4, lines 63-68) wherein a buffer vessel, 9, is linked to a purification unit, 10 (See column 5, lines 10-13) in order to clean the waste gas (See column 4, lines 35-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the buffer vessel and purification unit in Greefkes in the apparatus of modified Grant et al order to clean the waste gas.

As to claim 37, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 36 above, wherein Grant et al further discloses the production of fluorine (See column 1, lines 5-16), therefore, any gas that would be stored in the buffer would be fluorine gas.

In addition, claim 37 does not further limit the structural limitations as presented in claim 36. See MPEP 2214; See also *In re Danly*, 263 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971).

As to claim 41, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 1 above, wherein Grant et al further discloses an electrolyte tank, 1, with a heating coil, 2, and heat exchanger, 6, therefore, a power supply must clearly be available in order for these apparatuses to function. In addition, the power supply can subsequently used for any other apparatuses that are attached to the system of modified Grant et al. However, modified Grant et al fails to disclose a fluorine storage tank/buffer.

Greefkes discloses electrolysis cell (no figure number) (See column 4, lines 63-68) comprising a buffer vessel, 9, in order to hold gas (See column 4, lines 35-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the buffer vessel in Greefkes in the apparatus of modified Grant et al order to hold gas.

As to claim 45, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 42 above, wherein Grant et al discloses a method providing for an electrolyte tank, 1, with a heating coil, 2, and heat exchanger, 6, therefore, providing a power supply is necessary in order for these apparatuses to work. In addition, the power supply can subsequently used for other attachable apparatuses that achieve separate functions that are attached to the system of modified Grant et al.

Greefkes discloses electrolysis cell (no figure number) (See column 4, lines 63-68) comprising a buffer vessel, 9, in order to hold gas (See column 4, lines 35-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the buffer vessel in Greefkes in the method of modified Grant et al order to hold gas.

10. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grant et al (US 4125443) in view of Matson (US 4226695) as applied to claim 1 above, and further in view of Reinhardt (US 3966569).

As to claim 38, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 1 above, yet fails to explicitly disclose a purging means to remove fluids.

Reinhardt et al discloses a drainage pipe, 43, in order to remove filtrate. See column 3, lines 40-47.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the drainage pipe in Reinhardt et al in the apparatus of modified Grant et al in order to remove filtrate.

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11. Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grant et al (US 4125443) in view of Matson (US 4226695) as applied to claim 42 above, and further in view of Palmer (US 6855241).

As to claim 43, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 42 above, wherein Grant et al further comprises multiple electrolysis cells (See column 2, lines 60-67) yet fails to explicitly discuss the step of providing enough fluorine by less than a total number of fluorine generating units.

Palmer discloses a process comprising multiple electrolytic cells wherein the demand for production by operating only the number of cells necessary to provide a total capacity that meets the demand, and as demand changes, other combinations of cells can be started up, or turned off, in order to match the changes demand (See column 9, lines 23-43).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method to change the number of cells in Palmer in the method of modified Grant et al in order to match the changes in demand.

As to claim 44, modified Grant et al discloses all of the claimed limitations as discussed with respect to claim 42 above, wherein Matson discloses the replacement of cells (that means that the cell is removed) allowing for continuous operation (see column 8, lines 44-67). However, the combined references fail to explicitly disclose maintaining fluorine output to meet demand.

Palmer discloses a process comprising multiple electrolytic cells wherein the demand for production by operating only the number of cells necessary to provide a

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total capacity that meets the demand, and as demand changes, other combinations of cells can be started up, or turned off, in order to match the changes demand (See column 9, lines 23-43).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method to change the number of cells (add or subtract) in Palmer in the method of modified Grant et al in order to match the changes in demand.

Response to Arguments

Applicant's arguments filed 01 January 2008 have been fully considered but they are not persuasive. Applicant is requested to review the response to arguments listed below.

35 USC 112

Regarding claim 1, Examiner's rejection is withdrawn in view of Applicant's amendment to the claim.

35 USC 103

A. Claim 1

- I. **The combination of Grant and Matson fails to teach or suggest "individual fluorine generating cassettes being operably connected to a fluorine gas distribution system for the remote use and consumption of said fluorine gas" because reference numeral "5" of Grant is an electrolyte distribution pipe.**

In response, Examiner contends that the discharge pipe, 5, may perform as the distribution system because the apparatus of Grant et al is for the production of fluorine gas. See abstract.

II. **The combination of Grant and Matson fails to teach or suggest "fluorine generating cassettes being individually isolatable from said gas distribution system."**

In response, Examiner contends that the flow control valves act as an isolating mechanism between cassettes/cells. See columns 2-3, lines 34-19.

III. **The combination of Grant and Matson fail to teach or suggest "fluorine generating cassettes being individually... removable from the apparatus for remote maintenance."**

In response, Examiner contends that Matson discloses the replacing of electrodes from cells during shutdown. One of ordinary skill in the art would have found it obvious to remove the cells completely instead of each electrode during shutdown in order to keep the individual cells in tact.

B. Claim 42

The combination of Grant and Matson fail to disclose the limitations as discussed for claim 1 above, *supra*.

In response, Examiner requests Applicant to view the responses to arguments presented in claim 1 above, *supra*.

C. Claim 25

The isolation valves, 24, as shown in Rosenberg do not appear to be double isolation valves.

In response, Examiner contends that the isolation valves of Rosenberg are double isolation valves because the valves provide isolation in both directions. See column 10, lines 20-65.

There is no recitation in this claim of a wet scrubber utilizing water, such as shown in Reinhardt.

In response, Examiner contends that the extraction and scrubbing system as claimed can be performed by the wet scrubber of Reinhardt thus it would have been obvious to combine it with modified Grant for removing dust that accompanies the gas. See column 8, lines 6-67.

D. Claim 26

Installing all of the fluorine generating cassettes in a single common enclosure is significantly different from Tojo's disclosure of a single fluorine generating cell in an enclosure.

In response, Examiner contends that a plurality of cells was disclosed in claim 1. Thus, Tojo et al was provided to incorporate an enclosure. Thus, it would have been

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obvious to modify Grant et al to provide the enclosure of Tojo et al for controlling atmospheric conditions within the cell. See column 6, lines 1-24.

E. Claim 34

The cathode shown in Gange is a cathode structure for an electron gun which would not appear to be particularly relevant to the technology of the present invention.

In response, Examiner contends that Gange describes an electrolyte cell, thus, it would have been obvious to combine the cathode disclosed in Gange with modified Grant. See column 2, lines 60-67.

F. Claim 35

The buffer units of Greefkes do not hold gas whatsoever, thus serving a completely different and distinct function from those of the present invention.

In response, Examiner contends that functional limitations do not impart structure on an apparatus claim and are not examined on the merits. See MPEP 2114 - Apparatus and Article Claims - Functional Limitations.

G. Claim 38

The drainage pipe of Reinhardt is not a purge pipe as disclosed in the claimed invention.

In response, Examiner contends that a drainage pipe is an outlet that rids the system of certain materials similar to the claimed purge pipe.

H. Claim 43

The combination of Grant, Matson and Palmer fails to teach or suggest "providing the fluorine generating cassettes with sufficient fluorine generating capacity such that a total demand for fluorine may be met by less than the number of fluorine generating cassettes within said apparatus".

In response, Examiner contends that in light of Palmer, it would have been obvious for one of ordinary skill in the art to provide only as many cassettes as necessary for fulfilling the total fluorine demand requirements of the end user.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6544679 is additionally cited because of its pertinence to interconnections and removal of replacement cells.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tayan Patel, Esq. whose telephone number is (571) 272-9806. The examiner can normally be reached on Monday-Thursday, 8 AM-6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T. P./
Examiner, Art Unit 1795

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/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795